AN AJSS
An Asian Journal of Soil Science
Volume 11 | Issue 1 | June, 2016 | 243-245 | e ISSN–0976–7231 ■ Visit us : www.researchjournal.co.in

Research Note

DOI : 10.15740/HAS/AJSS/11.1/243-245

Water table fluctuation in well/tube wells of Gir Somnath district of Gujarat

■ J.V. POLARA AND R.B. CHAUHAN

Received : 21.12.2015; **Accepted :** 30.05.2016

MEMBERS OF RESEARCH FORUM:

Corresponding author :
J.V. POLARA, Department of Agricultural Chemistry and Soil Science, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA
Email: jvpolara@jau.in

Co-authors :
R.B. CHAUHAN, Department of Agricultural Chemistry and Soil Science, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA
Email: chauhanravi3612@gmail.com

Summary

In order to study, the fluctuation of well/tube well water table, 30 sites each from 6 talukas of Gir Somnath district from where water table depths were measured before and after monsoon. In all, 152 wells and 28 tube wells water table levels were studied in May, 2014 and again after 6th month in November, 2014. The water table before monsoon (May, 2014) in wells and tube wells ranged from 4.58 to 42.81 and 15.29 to 122.32 with mean value of 17.21 and 59.96 m, respectively. Surprisingly, water of some of the wells of all the talukas and tube well of Talala taluka rises gradually and were flowing freely on soil surface during the monsoon. At the end of the monsoon (November, 2014), the overall water table of Gir Somnath district in well ranged from 1.52 to 24.46 and in tube well from 3.05 to 76.45 m with mean value of 8.01 and 16.71 m, respectively. The minimum fluctuation of water table (8.46 m) in well was observed in Kodinar taluka, whereas in tube well it was in Sutrapada (38.48 m) taluka. The maximum fluctuation of water table in well was observed in Una (9.85 m) taluka and in tube well in Gir Gadhada (61.16 m) taluka.

Key words : Water table fluctuation, Well/tube well

How to cite this article : Polara, J.V. and Chauhan, R.B. (2016).Water table fluctuation in well/tube wells of Gir Somnath district of Gujarat. *Asian J. Soil Sci.*, **11** (1) : 243-245 : **DOI : 10.15740/HAS/AJSS/11.1/243-245.**

Groundnut is the main crop of Gir Somnath district which is cultivated in *Kharif* as rainfed crop besides mango as fruit crop and sugarcane as annual crop. Wheat is following by groundnut in *Rabi* season, but still wherever irrigation facilities available, farmers grow groundnut and sesamum in summer as irrigated crop. Because of assured yield and high productivity, the area under summer cultivation for both the crop are increasing day by day. Though, there has been an increase in the area under irrigation on one hand, inconsistent precipitation and insufficient recharge of ground water on the other hand has caused further lowering of water table, which results into deterioration in quality irrigation water. Poor crop growth due to salt hazards during dry winter and summer seasons in coastal region is mainly attributed to the use of such irrigation water. Therefore, generation of a detailed information about fluctuation of water table in well/tube well of Gir Somnath district is imperative for developing a strategy for judicious use of existing water resources of this region.

In order to study the present and fluctuation of well/tube well water table of groundnut, cotton, sugarcane, wheat and sesamum growing areas of Gir Somnath district of Gujarat, 30 sites each from 6 talukas (Talala, Veraval, Sutrapada, Kodinar, Gir Gadhada and Una) from where water table depth were measured before (May)

and after monsoon (November). In all, 152 wells and 28 tube wells water table levels were studied in May, 2014 and again after 6th month in November, 2014 at same site.

The data presented in Table 1 revealed that the highest (12.87 m) well water table during summer was found in Talala taluka, which was very close adjoining Gir Gadhada (16.18 m) and Veraval taluka (17.86 m) near the sea cost. Almost similar observation were noted in case of tube well water table. The lowest (19.07 m) well water table was noted in Sutrapada, while in case of tube well it was in Veraval (69.64 m) taluka. The overall water table of Gir Somnath district in well ranged from 4.58 to 42.81 m and in tube well 15.29 to 122.32 m with mean value of 17.21 and 59.96 m, respectively.

The highest (1.10 m) water table during monsoon in well was noted in Talala taluka and in tube well in Veraval (3.00 m) taluka. Similar observations were also reported by Gupta and Khosla (1982) during July and August, when most of the rains were received. Surprisingly, water of some of the wells of all the talukas and tube well of Talala taluka were flowing freely on soil surface during monsoon. Similarly, More *et al.* (1988); Kadam *et al.* (1995) and Kabariya *et al.* (2004) reported that the water table starts rising from month of July and is almost at ground level in the month of September. The lowest (2.41 m) well water table was noted in Gir Gadhada and in tube well in Sutrapada (5.20 m) taluka. The overall water table depth in well varied from 0.00 to 15.29 and in tube well from 0.00 to 9.17 m with mean value of 2.11 and 4.08 m, respectively. At the end of monsoon (November), the highest (3.86 m) and the lowest (9.70 m) water tables in wells were noted in Talala and Sutrapada, while in case of tube wells it was in Gir Gadhada (17.64 m) and Veraval (22.79 m), respectively. The overall water table of Gir Somnath district in well ranged from 1.52 to 24.46 and in tube well from 3.05 to 76.45 m with with mean values of 8.01 and 16.71 m, respectively. These observations support the earlier work of Bharamde *et al.* (2001) and Kabariya *et al.* (2004).

The minimum fluctuation of water table (8.46 m) in well was observed in Kodinar taluka, whereas in tube well it was in Sutrapada (38.48 m) taluka. The maximum fluctuation of water table in well was observed in Una (9.85 m) taluka and in tube well in Gir Gadhada (61.16 m) taluka. The overall water table fluctuation at the end of monsoon (November, 2014) of Gir Somnath district in well ranged from 0.93 to 27.52 and in tube well from 6.12 to 107.03 m with mean value of 9.20 and 43.25 m, respectively. There was a rapid rise in water table with the onset of rainy season and it remained close to the soil surface during August and September. From October on wards, the water table receded with occasional sharp rise due to rainfall.

Table 1 : Fluctuation of well/tube well water table in Gir Somnath district

Name of taluka		Water table (m)							
		Before monsoon (May, 2014)		Maximum		After monsoon (November, 2014)		Fluctuation	
		Well	Tube well	Well	Tube well	Well	Tube well	Well	Tube well
Talala	Range	6.11-27.52	15.29-122.32	0.00-6.12	0.00-9.17	1.52-10.70	3.05-21.40	2.14-16.82	9.18-100.92
	Mean	12.87(20)•	49.08(10)	(1.10)	(4.71)	(3.86)	(8.71)	(9.01)	(40.37)
Veraval	Range	6.11-32.11	22.93-122.32	0.00-7.65	1.53-7.65	1.52-13.76	9.17-76.45	1.53-22.94	6.12-107.03
	Mean	17.86(19)	69.64(11)	(1.40)	(3.00)	(8.86)	(22.79)	(9.00)	(46.85)
Sutrapada	Range	6.11-42.81	36.69-88.68	0.00-6.12	3.06-7.65	3.05-24.46	12.33-30.58	1.53-27.52	19.88-67.28
	Mean	19.07(24)	58.86(6)	(1.71)	(5.20)	(9.70)	(20.38)	(9.37)	(38.48)
Kodinar	Range	6.11-30.58	-	0.00-4.59	-	1.52-18.34	-	3.06-18.35	-
	Mean	18.09(30)	-	(1.87)	-	(9.63)	-	(8.46)	-
Gir Gadhada	Range	4.58-29.96	68.80-68.80	0.00-9.17	3.06-3.06	1.52-13.76	7.64-7.64	0.93-20.79	61.16-61.16
	Mean	16.18(29)	68.80(1)	(2.41)	(3.06)	(6.76)	(7.64)	(9.42)	(61.16)
Una	Range	4.58-42.81	-	0.00-4.59	-	1.52-16.81	-	1.53-27.52	-
	Mean	18.30(30)	-	(1.87)	-	(8.46)	-	(9.85)	-
Overall	Range	4.58-42.81	15.29-122.32	0.00-15.29	0.00-9.17	1.52-24.46	3.05-76.45	0.93-27.52	6.12-107.03
	Mean	17.21(152)	59.96(28)	(2.11)	(4.08)	(8.01)	(16.71)	(9.20)	(43.25)

•Figures in the parenthesis indicate number of well/tube well

Literature Cited

Bharamde P.R., Sinde, S.D., Rodge R.P., Jadhav, G.S. and Shelke D.K. (2001). Water table fluctuations, quality of ground water and soil health in Jayakwadi command. *J. Indian. Soc. Soil Sci.* **49**: 190-192.

Gupta, R.K. and Khosla, B.K. (1982). Seasonal variation in salt and water content profiles in shallow and saline ground water table. *Indian J. Agric. Sci.,* **52**(8): 506 - 510.

Kabariya, B.D., Polara, J.V., Ranpariya, L.B., Butani, B.M. and Timbaliya, N.K. (2004). Water table fluctuation in groundnut growing areas of Amreli district of Gujarat. Paper presented in National Symposium on "Enhensing productivity of groundnut for sustaining food and nutritional security" during October 11-13, 2004 at National Research Center for Groundnut, Junagadh (GUJARAT) INDIA.

Kadam, R.H., Shingate, M.B. and Patil, J.D. (1995). Water fluctuation and salt content in ground water table in villege Kasaba digraj Sangali district. *J. Maharashtra Agric. Univ.,* **20** (2) : 286-287.

More, S.D., Goverdhan, V., Ghousikar, C.P. and Malewar, G.V. (1988). Seasonal change in ground water table and salt distribution in soil profile under pune commend. *J. Maharashtra Agric. Univ.,* **13**(1): 90-91.